TATEA F. MUELLER (PYGMAEOPREMNA MERRILL) AND PREMNA LINNAEUS

E. D. Merrill

In 1883 *Tatea* F. Mueller was described as a monotypic genus based on two collections from Arnheim's Land, northern Australia. In Briquet's treatment of the Verbenaceae, Engler & Prantl Nat. Pflanzenfam. IV (3a): 149. 1895, following Baillon's interpretation of the genus, he placed *Tatea* F. Muell. in the Verbenoideae-Lantaneae next to *Lantana* Linn. He stated, however, that he was not certain that this indicated alliance was correct. This erroneous disposition of *Tatea* was probably one reason why that genus was not considered by me as a possibility, in 1910, when I proposed and described *Pygmaeopremna* Merr. to take a greatly dwarfed Philippine species that I had originally placed in the herbarium as *Premna*. What I assumed to be a distinct genus was placed next to *Premna* Linn. in the Viticoideae-Viticeae, which is manifestly correct; this is also the alliance of *Tatea* F. Muell. (= *Pygmaeopremna* Merr.), as F. Mueller correctly surmised and as Junell's [1] recent morphological study indicates.

Doctor Lam [2] in 1919 recognized *Pygmaeopremna* Merr. as valid, but in the Lam and Bakhuizen van den Brink [3] supplementary work on the Malaysian Verbenaceae in 1921, they expressed the opinion, in which I concur, that *Pygmaeopremna* Merr. could not be distinguished from *Premna* Linn.; but they erred in reducing *Pygmaeopremna humilis* Merr. to *Premna timoriana* Decne., of Timor, as the latter is a shrub several meters high. In 1923, I not only accepted this reduction of *Pygmaeopremna* Merr., but also reduced its type species to the Indian *Premna herbacea* Roxb. I still feel that this disposition of *Pygmaeopremna humilis* Merr. is correct, in spite of the 2-celled ovaries of *Tatea* F. Muell. and of *Pygmaeopremna* Merr. as compared with the conventional 4-celled ones of *Premna* Linn.; but the ovary cells of true *Premna* species vary from two to four, hence this character does not hold as a differential one.

Junell in 1934, in connection with his morphological work on the ovary characters of various genera of the Verbenaceae and the Labiatae, had an opportunity of examining material representing what he took to be three species of *Tatea* F. Muell., including specimens of *T. acaulis* F. Muell. sent to Kew by F. Mueller, authentic specimens representing

[1] Junell, S. Zur Gynäcaeummorphologie und Systematik der Verbenaceen und Labiateen. Symb. Bot. Upsal. I(4): 1–219. *pl. 1–8, fig. 1–253.* 1934 (p. 85).

[2] Lam, H. J. The Verbenaceae of the Malayan Archipelago Together with Those from the Malayan Peninsula, the Philippines, the Bismarck-Archipelago, and the Palaw, Marianne and Caroline Islands. 1–370. *pl. 1–3.* 1919 (p. 160).

[3] Lam, H. J. & Bakhuizen van den Brink, R. C. Revision of the Verbenaceae of the Dutch East-Indies and Surrounding Countries. Bull. Jard. Bot. Buitenz. III. 3: 1–116. i-iii. 1921 (p. 37).

Pygmaeopremna humilis Merr., which I had sent to Kew, and various Indian collections representing *Premna herbacea* Roxb. He overlooked what is apparently another representative of the group, *Premna nana* Coll. & Hemsl., Jour. Linn. Soc. Bot. 28: 109. 1890, which was based on specimens from the Shan hills in Burma, but which is now also known from Siam.

I agree with Junell that a natural group is represented by the several species, whether it be maintained as a distinct genus or placed as a minor category, distinguishable chiefly by growth form, under *Premna* Linn. He decided that *Pygmaeopremna* Merr. (1910) was congeneric with *Tatea* F. Muell. (1883) which I accept, but because of priority he selected F. Mueller's generic name to take the three species that he briefly considered. He apparently did not realize that, under the accepted rules of nomenclature, the verbenaceous *Tatea* F. Muell. (1883) was invalidated by the earlier rubiaceous *Tatea* Seemann (1866), for it does not matter that the latter is a synonym of the earlier *Bikkia* Reinwardt. Under the provisions of the Code, if one wishes to maintain this little group as one worthy of generic rank, then *Pygmaeopremna* Merr. is the correct generic name.

I still consider that *Tatea* F. Muell. (non Seemann) = *Pygmaeopremna* Merr. is but a greatly dwarfed form of *Premna* Linn. and in this discussion reduce both to the latter genus. In reconsidering all characters of these dwarf species, and comparing these characters with the corresponding ones of the scandent species, the erect shrubs, and the small trees, I conclude that it would be perhaps as logical to segregate the scandent species of *Premna* from the erect ones, which no taxonomist has ever suggested, as it is to attempt to maintain the dwarfed forms here discussed as representing a separate genus. It seems to me that the only differential character that really holds is the actual dwarfing due to habitat, and I am not now willing to recognize a genus that can be maintained only on a habit difference. I must confess that in reaching this conclusion I have been distinctly more influenced by the opinions of thoroughly competent taxonomists, including Schauer, C. B. Clarke, Lam, Craib, Dop, and others, than by the latest morphological findings in this case. Junell should, however, be given credit for recognizing that *Pygmaeopremna* Merr. was, indeed, the same as *Tatea* F. Muell., for this finding represents a distinct contribution. I merely differ in that I believe that both must be reduced to *Premna* Linn.; but if one elects to maintain the group as distinct then *Pygmaeopremna* Merr. will replace *Tatea* F. Mueller.

While here I have tentatively recognized the Australian species as distinct, I am by no means certain that this will prove to be the case when it is possible to make really critical comparisons of representative Asiatic and Australian collections of *Premna herbacea* Roxb. and *Tatea acaulis* F. Muell. With specimens before me from India, Burma, Indo-China, Hainan, the Philippines, and, at last, a single collection from the Netherlands East Indies (Sumba), I am impressed with the close resemblances,

in general, of all of these specimens. Although a morphological study may have indicated characters which induced Junell to retain *Tatea* F. Muell. as worthy of generic rank, with *Pygmaeopremna* Merr. as a synonym, a critical taxonomic study of the several "species" was apparently not made; as he was studying essentially the morphology of the ovary, it is suspected that he over-stressed the 2-celled character. I am satisfied to interpret Roxburgh's species as one having a natural wide geographic distribution, adapted to a peculiarly restricted habitat, and included in it I still retain the Philippine form that I described as new in 1910, as a synonym. In view of the fact that this dwarf species has now shown up in Sumba, south of Flores in the Lesser Sunda Islands, which, from a geographic standpoint, is closer to Arnheim's Land than is, for instance, Northern Luzon to Hainan, I should not be surprised if F. Mueller's Australian species was not eventually found to represent but a form of the one Roxburgh characterized on the basis of Bengal specimens in 1832.

Premna acaulis (F.-Muell.) comb. nov.

Tatea acaulis F.-Muell. Trans. Roy. Soc. S. Austral. **6:** 34. 1883; Junell, Symb. Bot. Upsal. **1**(4)**:** 85. 1934.

This species, the type of the genus *Tatea* F. Muell. (1883), non Seemann (1866), seems to be known only from the two original collections cited in the original description, one between Bridge Creek and McKinlay River at Twelve-Mile, and one from Yam Creek, both in Arnheim's Land, northern Australia. Von Mueller speaks of it as growing in alluvial soil, its underground parts (which he called a rhizome) two feet long. Apparently this "rhizome" was the greatly developed ligneous root which is a characteristic of all of these dwarfed forms of *Premna*.

There is an earlier published *Premna acaulis* Wall. ex Schauer in DC. Prodr. **11:** 637. 1847, but as this appeared only as a synonym, no description ever having been published, it does not invalidate the use of the same specific name within *Premna* for another species. Its use, by Schauer, was apparently due to an error. He listed "P. acaulis Wall. cat. 1776!" but the only entry in Wallich's List under that number, at least in our copy of that work, is *Premna ? pygmaea* Wall., strictly a *nomen nudum;* this was from Nepaul. The entry in *Index Kewensis* was apparently taken from Schauer's work, for both *Premna pygmaea* Wall. and *P. acaulis* Wall. appear in that work, both referring to Wallich "Cat." [List] no. 1776 (1829).

AUSTRALIA: Arnheim's Land, *Tate, Froelsche,* no specimens seen.

Premna herbacea Roxb. Hort. Beng. 46. 1814, *nom. nud.,* Fl. Ind. ed. 2, **3:** 80. 1832, *descr.;* Schauer in DC. Prodr. **11:** 637. 1847; C. B. Clarke in Hook. f. Fl. Brit. Ind. **4:** 581. 1885; Duthie, Fl. Upper Ganget. Plain **2:** 233. 1911; Merr. Enum. Philip. Fl. Pl. **3:** 390. 1923; Dop in Lecomte, Fl. Gén. Indo-Chine **4:** 815. 1935.

Premna pygmaea Wall. List. no. 1776. 1829, *nom. nud.*

Premna acaulis Wall. ex Schauer in DC. Prodr. **11:** 637. 1847, *nom.* in syn.

Gumira herbacea O. Kuntze, Rev. Gen. Pl. **2**: 507. 1891.
Pygmacopremna humilis Merr. Philip. Jour. Sci. Bot. **5**: 225. 1910.
Tatea herbacea Junell, Symb. Bot. Upsal. **1**(4): 85. 1934; Meeuse, Blumea **5**: 637. 1947 (*syn. nov.*).
Tatea humilis Junell, l.c.; Meeuse, l.c. (*syn. nov.*).

INDIA: Punjab, *Koelz 4281* (A, U), pine forest, alt. 600 m.; Assam, *Clarke 42164* (U), alt. 100 m.; Sikkim, *Hooker s.n.* (G), alt. 600 m.; Northwestern Himalayan region, *Thomson, s.n.* (G), alt. 100 m.; Kumaon, *Strachey & Winterbottom 1* (G), alt. 900 m.
BURMA: Kalaw and Maymyo, *Dickason 1175, 5942* (A).
INDO-CHINA: *Pierre 1217* (A), *Thorel 2050* (A), *Poilane 22530* (A), *Petelot 4341* (U).
HAINAN: *McClure 9260* (A), *Lei 1240* (A).
PHILIPPINES: Luzon (Cagayan), *B.S. 7841 Ramos* (U), type collection *Pygmacopremna humilis* Merr.; Mindanao (Bukidnon), *B.S. 26123 Fenix* (A), *28489 Ramos & Edano* (A, U).
LESSER SUNDA ISLANDS: Sumba, *DeVoogt 2253* (A), det. Van Steenis. The specimens examined are preserved in the Arnold Arboretum Herbarium (A), the U. S. National Herbarium (U) and the Gray Herbarium (G).

I am now willing to refer all of the above cited specimens to a single, widely distributed, and considering this wide distribution, slightly variable species. The most comprehensive statement I have seen regarding its distribution in India is that of Duthie who indicated that it extends from the subtropical Himalayan region (Kashmir to Bhutan) to the southern part of the Western Peninsula; Roxburgh's actual type was from Bengal. The Burma, Indo-China, and Hainan specimens before me seem clearly to represent the same species, and this eastern extension is a more or less natural range. Craib recorded it, together with the allied *Premna nana* Coll. & Hemsl., from Siam. In the Philippines it occurs in northern Luzon and in Mindanao. The Sumba specimen is the only collection I have seen from the Malay Archipelago. I expect, however, that future field work in Malaysia may show it to be more widely distributed there. After all the vast areas now covered with coarse grasses are p'aces that normally do not attract either the botanist or the collector. Intensive field work merely proves over and over again that the floras of such areas are strictly limited as to the number of species, and further that nearly all of the species characteristic of these open grasslands are of very wide geographic distribution. On the other hand the primary forest, and for that matter even the secondary forest areas, are infinitely more rewarding from a collector's standpoint. It is suspected that collectors here and there, realizing this situation, may have given only cursory attention to the extensive areas of open grasslands.

Duthie notes that this plant springs up (from its extensively developed ligneous roots) after jungle fires; this is what it does in the Philippines where it is found only in open grasslands which are normally burned over each year in the dry season. Duthie further states: "A good example of a plant belonging to a genus mostly represented by trees and shrubs [some

woody vines], and which has become permanently dwarfed by continuous exposure to periodical fires."

Immediately following a fire, short, practically herbaceous shoots appear which quickly produce leaves and flowers, the internodes then being practically non-existent so that the young leaves appear to be in a whorl of four. Soon, however, the shoot becomes lignified and more or less elongated internodes develop. By the time the fruits are mature the plant has the aspect of a greatly dwarfed, simple, or occasionally slightly branched undershrub, up to about 10 cm. high. One may surmise that its relatively wide distribution in what is a distinctly special habitat, and one that supports a flora limited to peculiarly few distinct species, may be due to the agency of migratory frugivorous birds.

It is suspected that the peculiar habit is a reflection of the habitat where the vegetation is periodically burned. If a dry season passes without the grasslands being burned over, then the original short herbaceous stems become lignified and may persist for a second season, the plants attaining a very modest height (up to 10 cm.), with distinct internodes. I am unable to associate the differences in leaf size and shape, indumentum, and indentation, with other tangible differences in the inflorescences, flowers, and fruits, or with the somewhat elongated internodes of the older more or less ligneous stems as compared with the apparently whorled leaves of the very young shoots. The leaves may be dentate, denticulate, crenate or even undulate-crenate in the upper half or two-thirds, but the basal parts are entire. *Pygmaeopremna humilis* Merr. was originally described as having entire leaves, but the type collection shows that they are minutely and rather distantly denticulate. Many of the specimens have more or less elongated erect woody stems, one or two to five cm. in length; one specimen examined has stems 10 cm. long. In two specimens of *Koelz 4281* from the Punjab, one has almost entire leaves, and the other rather prominently dentate ones. Philippine material has more nearly entire leaves, varying from subentire and minutely denticulate to crenate-undulate or distinctly toothed. Doctor Dop, with more Indo-China material at his disposal than I have, indicates much the same variation in his detailed description.

Premna obovata sp. nov.

Suffrutex parvus, sect. *Pygmaeopremnae,* caulibus vix 3 cm. longis, e radicibus lignosis ut in *Premna herbacea* Roxb. ab qua differt foliis maturis multo majoribus, ad 15 cm. longis et 9 cm. latis, obovatis, integerrimis, apice late rotundatis. Partibus junioribus inflorescentiisque breviter pubescentibus, caulibus pallidis, teretibus, simplicibus vel depauperato ramosis, ad 2 mm. diametro, maturis glabris, internodiis vix 5 mm. longis; foliis (minoribus 3–5 × 1.5–3 cm., integris vel sursum obscure crenato-dentatis, majoribus 15 × 9 cm., integerrimis, apice late rotundatis), chartaceis, sicco pallide olivaceis, subtus pallidioribus, supra consperse sed breviter subhispido-pubescentibus, deorsum angustatis, basi late acutis; nervis primariis utrinque circiter 5, perspicuis, distantibus,

adscendentibus, reticulis laxis; petiolo circiter 5 mm. longo; cymis terminalibus, breviter pedunculatis, circiter 2 cm. longis latisque, breviter subhispido-pubescentibus, bracteis bracteolisque linearis, brevibus; calycibus membranaceis, extus breviter pubescentibus, vix bilabiatis, accrescentibus at sub fructu 4 mm. diametro, subinfundibuliformibus; corolla extus breviter pubescens, intus villosa, vix 2.5 mm. longa, bilabiata, labium superum rotundatum, integrum, inferum subaequaliter 3-lobatum; filamentis brevibus, inclusis; fructibus globosis vel subglobosis, glabris, 5 mm. longis, 2-locellatis.

CHINA: Yunnan Province, Shunning, Hila, *T. T. Yü 16431* (A), on grassy slopes, alt. 1280 m., June 23, 1938 said to be common; the collector noted that the fruits are 2-celled as I find them to be.

This extends the range of this group of dwarfed *Premna* species to Yunnan. In some respects, this proposed new species is suggestive of *Premna herbacea* Roxb., especially in those plants where only the smaller leaves have developed. In the specimens where the leaves have attained their full size, the differences are very striking. Sometimes the young stems are solitary, at other times appearing in fascicles of several, but in the material available none of them are more than about 2 cm. in length and normally each bears one or two pairs of leaves. The most striking character of the species is its very large obovate, broadly rounded, entire, larger leaves; however, in two plants on the sheet the larger leaves have not developed. Only withered corollas were noted.

ARNOLD ARBORETUM,
HARVARD UNIVERSITY.